WO 2005/071068 1 PCT/EP2005/000694

SEQUENCE LISTING

```
<110> CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS
<110> BIONOSTRA, S.L.
<120> EMPTY CAPSIDS (VLPs(-VP4)) OF THE INFECTIOUS BURSAL DISEASE VIRUS
        (IBDV), OBTAINMENT PROCESS AND APPLICATIONS
<130> P1392PC
<150> ES P200400121
<151> 2004-01-21 (January 21, 2004)
<160> 10
<170> PatentIn version 3.1
<210> 1
<211> 35
<212> DNA
<213> Artificial sequence
<220> Synthetic DNA
<223> Oligo I primer
<400> 1
gcgcagatct atgacaaacc tgtcagatca aaccc
                                                                       35
<210> 2
<211> 34
<212> DNA
<213> Artificial sequence
<220> Synthetic DNA
<223> Oligo II primer
<400> 2
gcgcaagctt aggcgagagt cagctgcctt atgc
                                                                       34
<210> 3
<211> 7595
<212> DNA
<213> Artificial sequence
<220>
<223> Plasmid pFBD/pVP2-his-VP3
<221> promoter
<222> (157)..(285)
<223> Promotor ppolh
<221> CDS
<222> (291)..(1289)
<223> pVP2 ORF
```

WO 2005/071068 2 PCT/EP2005/000694

<222> (romoter 7443)(romoter									
<400> 3		.cgtcg aq	gtgattgt	a aata	ıaaatgt	aatttac	agt a	atagt	atttt	60
aattaata	ta caaat	gattt ga	ataataat	t ctta	ıtttaac	tataata	tat t	gtgt	tgggt	120
tgaattaa	ag gtccg	rtatac to	ccggaata	t taat	agatca	tggagat	aat t	caaaa	ıtgata	180
accatctc	gc aaata	aataa gi	tattttac	t gttt	tcgtaa	cagtttt	gta a	ataaa	aaaac	240
ctataaata	at tccgg	rattat to	cataccgt	c ccac	catcgg	gcgcgga		Met 1		296
aac ctg ? Asn Leu :										344
ctg atg of Leu Met 1										392
aag cac a Lys His ' 35 `										440
gac aca (Asp Thr (Phe P						488
att gtg										536
gat cag Asp Gln										584
tgc agg Cys Arg 1										632
ggt ggc Gly Gly 115										680
gga agc Gly Ser				Val S						728
gca aca Ala Thr										776
ggg gtc Gly Val				Thr S			Gly			824

agg ctt ggt Arg Leu Gly 180											872
gcc aca tgt Ala Thr Cys 195	gac agc Asp Ser	agt gac Ser Asp 200	agg co Arg Pi	cc aga ro Arg	gtc Val 205	tac Tyr	acc Thr	ata Ile	act Thr	gca Ala 210	920
gcc gat gat Ala Asp Asp											968
atc aca ctg Ile Thr Leu			Ile A								1016
ggg gga gag Gly Gly Glu 245											1064
gcc acc atc Ala Thr Ile 260											1112
gct gtg gcc Ala Val Ala 275											1160
cca ttc aat Pro Phe Asn							_				1208
tcc atc aaa Ser Ile Lys			Thr S								1256
gat cag atg Asp Gln Met 325						gcag	gtgad	cga 1	tccat	tggtgg	1309
caactatcca	ggggccct	cc gtccc	gtcac	gctagto	ggcc	taco	gaaag	gag 1	tggca	aacagg	1369
atccgtcgtt	acggtcgc	tg gggtg	agcaa	cttcga	gctg	atco	ccaaa	atc (ctgaa	actagc	1429
aaagaacctg	gttacaga	at acggc	cgatt '	tgaccca	agga	gcca	atgaa	act a	acaca	aaaatt	1489
gatactgagt	gagaggga	cc gtctt	ggcat	caagac	cgtc	tggc	ccaac	caa (ggga	gtacac	1549
tgactttcgt	gaatactt	ca tggag	gtggc	cgacct	caac	tctc	caact	iga a	agat1	tgcagg	1609
agcattcggc	ttcaaaga	ca taatc	cgggc	cataag	gagg	ataç	gctgt	tga (cggt	ggtctc	1669
cacattgttc	ccacctgc	cg ctccc	ctagc	ccatgca	aatt	gggg	gaag	gtg -	taga	ctacct	1729
gctgggcgat	gaggccca	gg ccgct	tcagg	aactgct	cga	gccg	gcgto	cag (gaaa	agcaag	1789
agetgeetca	ggccgcat	aa ggcag	ctgac	tataga	ctaa	gctt	gtc	gag a	aagta	actaga	1849
ggatcataat	cagccata	cc acatt	tgtag	aggttti	tact	tgct	ttaa	aaa a	aacct	tcccac	1909

acctcccct gaacct	gaaa cataaaatga	atgcaattgt	tgttgttaac	ttgtttattg	1969
cagcttataa tggtta	caaa taaagcaata	gcatcacaaa	tttcacaaat	aaagcatttt	2029
tttcactgca ttctag	ttgt ggtttgtcca	aactcatcaa	tgtatcttat	catgtctgga	2089
tctgatcact gcttga	gcct aggagatccg	, aaccagataa	gtgaaatcta	gttccaaact	2149
attttgtcat ttttaa	tttt cgtattagct	: tacgacgcta	cacccagttc	ccatctattt	2209
tgtcactctt ccctaa	ataa toottaaaa	ctccatttcc	acccctccca	gttcccaact	2269
attttgtccg cccaca	gegg ggcattttt	ttcctgttat	gtttttaatc	aaacatcctg	2329
ccaactccat gtgaca	aacc gtcatcttcc	gctactttt	ctctgtcaca	gaatgaaaat	2389
ttttctgtca tctctt	cgtt attaatgttt	gtaattgact	gaatatcaac	gcttatttgc	2449
agcctgaatg gcgaate	ggga cgcgccctgt	agcggcgcat	taagcgcggc	gggtgtggtg	2509
gttacgcgca gcgtga	cege tacaettged	agcgccctag	cgcccgctcc	tttcgctttc	2569
ttcccttcct ttctcg	ccac gttcgccggc	tttccccgtc	aagctctaaa	tegggggete	2629
cctttagggt tccgat	ttag tgctttacgo	g cacctcgacc	ccaaaaaact	tgattagggt	2689
gatggttcac gtagtg	ggcc atcgccctga	tagacggttt	ttcgcccttt	gacgttggag	2749
tccacgttct ttaata	gtgg actcttgtto	c caaactggaa	caacactcaa	ccctatctcg	2809
gtctattctt ttgatt	tata agggatttt	g ccgatttcgg	cctattggtt	aaaaaatgag	2869
ctgatttaac aaaaat	ttaa cgcgaatttt	aacaaaatat	taacgtttac	aatttcaggt	2929
ggcacttttc ggggaa	atgt gegeggaace	cctatttgtt	tatttttcta	aatacattca	2989
aatatgtatc cgctca	tgag acaataacco	tgataaatgc	ttcaataata	ttgaaaaagg	3049
aagagtatga gtattc	aaca tttccgtgtc	gcccttattc	ccttttttgc	ggcattttgc	3109
cttcctgttt ttgctc	accc agaaacgcto	g gtgaaagtaa	aagatgctga	agatcagttg	3169
ggtgcacgag tgggtt	acat cgaactggat	ctcaacagcg	gtaagatcct	tgagagtttt	3229
cgccccgaag aacgtt	ttcc aatgatgago	acttttaaag	ttctgctatg	tggcgcggta	3289
ttatcccgta ttgacg	ccgg gcaagagcaa	a ctcggtcgcc	gcatacacta	ttctcagaat	3349
gacttggttg agtact	cacc agtcacagas	a aagcatctta	cggatggcat	gacagtaaga	3409
gaattatgca gtgctg	ccat aaccatgagt	gataacactg	cggccaactt	acttctgaca	3469
acgatcggag gaccga	agga gctaaccgct	tttttgcaca	acatggggga	tcatgtaact	3529
cgccttgatc gttggg	aacc ggagctgaat	gaagccatac	caaacgacga	gcgtgacacc	3589
acgatgcctg tagcaa	tggc aacaacgtt	g cgcaaactat	taactggcga	actacttact	3649
ctagcttccc ggcaac	aatt aatagactgo	g atggaggcgg	ataaagttgc	aggaccactt	3709

ctgcgctcgg	cccttccggc	tggctggttt	attgctgata	aatctggagc	cggtgagcgt	3769
gggtctcgcg	gtatcattgc	agcactgggg	ccagatggta	agccctcccg	tatcgtagtt	3829
atctacacga	cggggagtca	ggcaactatg	gatgaacgaa	atagacagat	cgctgagata	3889
ggtgcctcac	tgattaagca	ttggtaactg	tcagaccaag	tttactcata	tatactttag	3949
attgatttaa	aacttcattt	ttaatttaaa	aggatctagg	tgaagatcct	ttttgataat	4009
ctcatgacca	aaatccctta	acgtgagttt	tcgttccact	gagcgtcaga	ccccgtagaa	4069
aagatcaaag	gatcttcttg	agatcctttt	tttctgcgcg	taatctgctg	cttgcaaaca	4129
aaaaaaccac	cgctaccagc	ggtggtttgt	ttgccggatc	aagagctacc	aactctttt	4189
ccgaaggtaa	ctggcttcag	cagagcgcag	ataccaaata	ctgtccttct	agtgtagccg	4249
tagttaggcc	accacttcaa	gaactctgta	gcaccgccta	catacctcgc	tctgctaatc	4309
ctgttaccag	tggctgctgc	cagtggcgat	aagtcgtgtc	ttaccgggtt	ggactcaaga	4369
cgatagttac	cggataaggc	gcagcggtcg	ggctgaacgg	ggggttcgtg	cacacagece	4429
agcttggagc	gaacgaccta	caccgaactg	agatacctac	agcgtgagca	ttgagaaagc	4489
gccacgcttc	ccgaagggag	aaaggcggac	aggtatccgg	taagcggcag	ggtcggaaca	4549
ggagagcgca	cgagggagct	tccaggggga	aacgcctggt	atctttatag	tcctgtcggg	4609
tttcgccacc	tctgacttga	gcgtcgattt	ttgtgatgct	cgtcaggggg	gcggagccta	4669
tggaaaaacg	ccagcaacgc	ggccttttta	cggttcctgg	ccttttgctg	gccttttgct	4729
cacatgttct	ttcctgcgtt	atcccctgat	tctgtggata	accgtattac	cgcctttgag	4789
tgagctgata	ccgctcgccg	cagccgaacg	accgagcgca	gcgagtcagt	gagcgaggaa	4849
gcggaagagc	gcctgatgcg	gtattttctc	cttacgcatc	tgtgcggtat	ttcacaccgc	4909
agaccagccg	cgtaacctgg	caaaatcggt	tacggttgag	taataaatgg	atgccctgcg	4969
taagcgggtg	tgggcggaca	ataaagtctt	aaactgaaca	aaatagatct	aaactatgac	5029
aataaagtct	taaactagac	agaatagttg	taaactgaaa	tcagtccagt	tatgctgtga	5089
aaaagcatac	tggacttttg	ttatggctaa	agcaaactct	tcattttctg	aagtgcaaat	5149
tgcccgtcgt	attaaagagg	ggcgtggcca	agggcatggt	aaagactata	ttcgcggcgt	5209
tgtgacaatt	taccgaacaa	ctccgcggcc	gggaagccga	tctcggcttg	aacgaattgt	5269
taggtggcgg	tacttgggtc	gatatcaaag	tgcatcactt	cttcccgtat	gcccaacttt	5329
gtatagagag	ccactgcggg	atcgtcaccg	taatctgctt	gcacgtagat	cacataagca	5389
ccaagcgcgt	tggcctcatg	cttgaggaga	ttgatgagcg	cggtggcaat	gccctgcctc	5449
cggtgctcgc	cggagactgc	gagatcatag	atatagatct	cactacgcgg	ctgctcaaac	5509

at ~~~~~~	aataaaaaa	an an acacac	acaaccactt	cttaataas	aacaacaaac	5569
	cgtaagccgc					
gcgatgaatg	tcttactacg	gagcaagttc	ccgaggtaat	cggagtccgg	ctgatgttgg	5629
gagtaggtgg	ctacgtctcc	gaactcacga	ccgaaaagat	caagagcagc	ccgcatggat	5689
ttgacttggt	cagggccgag	cctacatgtg	cgaatgatgc	ccatacttga	gccacctaac	5749
tttgttttag	ggcgactgcc	ctgctgcgta	acatcgttgc	tgctgcgtaa	catcgttgct	5809
gctccataac	atcaaacatc	gacccacggc	gtaacgcgct	tgctgcttgg	atgcccgagg	5869
catagactgt	acaaaaaaac	agtcataaca	agccatgaaa	accgccactg	cgccgttacc	5929
accgctgcgt	tcggtcaagg	ttctggacca	gttgcgtgag	cgcatacgct	acttgcatta	5989
cagtttacga	accgaacagg	cttatgtcaa	ctgggttcgt	gccttcatcc	gtttccacgg	6049
tgtgcgtcac	ccggcaacct	tgggcagcag	cgaagtcgag	gcatttctgt	cctggctggc	6109
gaacgagcgc	aaggtttcgg	tctccacgca	tcgtcaggca	ttggcggcct	tgctgttctt	6169
ctacggcaag	gtgctgtgca	cggatctgcc	ctggcttcag	gagatcggta	gacctcggcc	6229
gtcgcggcgc	ttgccggtgg	tgctgacccc	ggatgaagtg	gttcgcatcc	teggttttet	6289
ggaaggcgag	catcgtttgt	tegeceagga	ctctagctat	agttctagtg	gttggcctac	6349
gtacccgtag	tggctatggc	agggcttgcc	gccccgacgt	tggctgcgag	ccctgggcct	6409
tcacccgaac	ttgggggttg	gggtggggaa	aaggaagaaa	cgcgggcgta	ttggtcccaa	6469
tggggtctcg	gtggggtatc	gacagagtgc	cagccctggg	accgaacccc	gcgtttatga	6529
acaaacgacc	caacacccgt	gcgttttatt	ctgtcttttt	attgccgtca	tagcgcgggt	6589
tccttccggt	attgtctcct	tccgtgtttc	agttagcctc	ccccatctcc	cggtaccgca	6649
tgcctcgaga	ctgcaggctc	tagattcgaa	ageggeegeg	actagtgagc	tcgtcgacgt	6709
aggcctttga	attccggatc	ctcactcaag	gtcctcatca	gagacggtcc	tgatccagcg	6769
gcccagccga	ccagggggtc	tctgtgttgg	agcattgggt	tttggcttgg	gctttggtag	6829
agcccgcctg	ggattgcgat	gcttcatctc	catcgcagtc	aagagcagat	ctttcatctg	6889
ttcttggttt	gggccacgtc	catggttgat	ttcatagact	ttggcaactt	cgtctatgaa	6949
agcttggggt	ggctctgcct	gtcctggagc	cccgtagatc	gacgtagctg	cccttaggat	7009
ttgttcttct	gatgccaacc	ggctcttctc	tgcatgcacg	tagtctagat	agtcctcgtt	7069
tgggtccggt	atttctcgtt	tgttctgcca	gtactttacc	tggcctgggc	ttggccctcg	7129
gtgcccattg	agtgctaccc	attctggtgt	tgcaaagtag	atgcccatgg	tctccatctt	7189
ctttgagatc	cgtgtgtctt	tttccctctg	tgcttcctct	ggtgtggggc	cccgagcctc	7249
cactccgtag	cctgctgtcc	cgtacttggc	cctttgcgac	ttgctgcctg	cttgtggtgc	7309

gtttgcaaga	aaatttcgca	tccgatgggc	gttcgggtcg	ctgagtgcga	agttggccat	7369
gtcagtcaca	atcccattct	cttccagcca	catgaacaca	ctgagtgcag	attggaatag	7429
tgggtccacg	ttggctgctg	cttccattgc	tctgacggca	ctctcgagtt	cgggggtctc	7489
tttgaactct	gatgcagcca	tggcgccctg	aaaatacagg	ttttcggtcg	ttgggatatc	7549
gtaatcgtga	tggtgatggt	gatggtagta	cgacatggtt	tcggac		7595
<210> 4						

<211> 333

<212> PRT

<213> Artificial sequence

<220>

<223> pVP2-his-VP3 protein

<400> 4

Met Thr Asn Leu Ser Asp Gln Thr Gln Gln Ile Val Pro Phe Ile Arg

Ser Leu Leu Met Pro Thr Thr Gly Pro Ala Ser Ile Pro Asp Asp Thr

Leu Glu Lys His Thr Leu Arg Ser Glu Thr Ser Thr Tyr Asn Leu Thr

Val Gly Asp Thr Gly Ser Gly Leu Ile Val Phe Phe Pro Gly Phe Pro

Gly Ser Ile Val Gly Ala His Tyr Thr Leu Gln Gly Asn Gly Asn Tyr

Lys Phe Asp Gln Met Leu Leu Thr Ala Gln Asn Leu Pro Ala Ser Tyr

Asn Tyr Cys Arg Leu Val Ser Arg Ser Leu Thr Val Arg Ser Ser Thr 105

Leu Pro Gly Gly Val Tyr Ala Leu Asn Gly Thr Ile Asn Ala Val Thr

Phe Gln Gly Ser Leu Ser Glu Leu Thr Asp Val Ser Tyr Asn Gly Leu 135

Met Ser Ala Thr Ala Asn Ile Asn Asp Lys Ile Gly Asn Val Leu Val

Gly Glu Gly Val Thr Val Leu Ser Leu Pro Thr Ser Tyr Asp Leu Gly

Tyr Val Arg Leu Gly Asp Pro Ile Pro Ala Ile Gly Leu Asp Pro Lys 180 185

Met Val Ala Thr Cys Asp Ser Ser Asp Arg Pro Arg Val Tyr Thr Ile 200

Thr	Ala 210	Ala	Asp	Asp	Tyr	Gln 215	Phe	Ser	Ser	Gln	Tyr 220	Gln	Pro	Gly	Gly	
Val 225	Thr	Ile	Thr	Leu	Phe 230	Ser	Ala	Asn	Ile	Asp 235	Ala	Ile	Thr	Ser	Leu 240	
Ser	Val	Gly	Gly	Glu 245	Leu	Val	Phe	Arg	Thr 250	Ser	Val	His	Gly	Leu 255	Val	
Leu	Gly	Ala	Thr 260	Ile	Tyr	Leu	Ile	Gly 265	Phe	Asp	Gly	Thr	Thr 270	Val	Ile	
Thr	Arg	Ala 275	Val	Ala	Ala	Asn	Asn 280	Gly	Leu	Thr	Thr	Gly 285	Thr	Asp	Asn	
Leu	Met 290	Pro	Phe	Asn	Leu	Val 295	Ile	Pro	Thr	Asn	Glu 300	Ile	Thr	Gln	Pro	
Ile 305	Thr	Ser	Ile	Lys	Leu 310	Glu	Ile	Val	Thr	Ser 315	Lys	Ser	Gly	Gly	Gln 320	
Ala	Gly	Asp	Gln	Met 325	Ser	Trp	Ser	Ala	Arg 330	Gly	Ser	Leu				
<210<211<212<213 223</400</400</4 \$220 <400 \$221 <211 <212 <213	1> 1 2> 1 3> 2 0> 3 3> 0 0> ! cagat	5 35 ONA Synth Oligo 5 tot a 6 34 ONA Artii	netic DIII	c DNA	A imer cc to	ytcaç	gatea	a aac	cee							35
<220 <223)> :	Synth	netio	o DNA	Ā	100										
<400 gcgc		6 ctt a	aggc	gagaç	gt ca	agcto	gaatt	atç	gc							34
<210 <211 <212 <213	L> : 2> : 3> :	7 33 DNA Artii				nce										
<220 <223	3> (Syntl Oligo														
<400 gcgc		7 ttc q	gatg	gcato	ca ga	agtto	caaaq	g aga	a							33

WO 2005/071068 9 PCT/EP2005/000694

<210>	8						
<211>	32						
<212>	DNA						
<213>	Arti	ficial sequ	ience				
<220>	Synt	hetic DNA					
		o VI prime:	2				
	5	F	-				
<400>	8						
cgcggat	ccc	tcaaggtcct	catcagagac	gg			32
<210>	9	-					
<211>	9600	1					
<212>	DNA						
<213>	Arti	ficial sequ	ience				
<223>	Plas	mid pESCURA	A/pVP2-VP3-0	GFP			
∠221×	nrom	otor					
		oter 9)(5859)					
<223>		oter GAL 1	(pVP2)				
			, <u>, , , , , , , , , , , , , , , , , , </u>				
		oter					
		2)(8080)					
<223>	Prom	noter GAL 2	(VP3-GFP)				
<221>	CDS						
		36)(9597)					
		-GFP ORF					
<400>	9						
ggccgca	acta	gtatcgatgg	attacaagga	tgacgacgat	aagatctgag	ctcttaatta	60
2022++	a++a	aaaaaaaatt	tggtcaagtc	tccaatcaac	attataaact	tatatacett	120
acaacc	نابانان	gccagaggcc	tggtcaagtc	cccaaccaag	geegeeggee	egeocacocc	120
gccagaa	aatt	tacqaaaaqa	tggaaaaggg	tcaaatcgtt	ggtagatacg	ttgttgacac	180
ttctaaa	ataa	gcgaatttct	tatgatttat	gatttttatt	attaaataag	ttataaaaaa	240
,						L-L-L-L-L-L-L	200
aataagi	tgta	tacaaatttt	aaagtgactc	ttaggtttta	aaacgaaaat	tettattett	300
gagtaag	atat	ttcctataga	tcaggttgct	ttctcaggta	tagcatgagg	tcactccaat	360
gagcaa	5000	ccccgcagg	0049900900				
tcagcto	gcat	taatgaatcg	gccaacgcgc	ggggagaggc	ggtttgcgta	ttgggcgctc	420
ttccgct	ttcc	tcgctcactg	actcgctgcg	ctcggtcgtt	cggctgcggc	gagcggtatc	480
	4		.	~~~~~~	~~~~	~~~~~~~	540
agetead	ctca	aaggeggtaa	tacggttatc	Cacagaacca	ggggacaacg	caggaaagaa	340
catoto	adda	aaaggggagg	aaaaggccag	gaaccgtaaa	aaggccgcgt	tactaacatt	600
	. 9			5 5		3 33 3	
tttccat	tagg	ctccgccccc	ctgacgagca	tcacaaaaat	cgacgctcaa	gtcagaggtg	660
gcgaaa	cccg	acaggactat	aaagatacca	ggcgtttccc	cctggaagct	ccctcgtgcg	720
at at ac	+ ~+ +	acas cost co	cacttacac	atacctctcc	acct++c+c	cttcaaasa	780
GLGEGG	Lyct	ccgaccctgc	cgcttaccgg	acaccigicoc	goodecood	ccccyggaag	700
cataace	actt	tctcatagct	cacgctgtag	gtatctcagt	tcggtgtagg	tegttegete	840
. 5 - 5 5 0			2 2 3				

WO 2005/071068 10 PCT/EP2005/000694

caagctgggc tgtgtgcacg	aaccccccgt	tcagcccgac	cgctgcgcct	tatccggtaa	900
ctatcgtctt gagtccaacc	cggtaagaca	cgacttatcg	ccactggcag	cagccactgg	960
taacaggatt agcagagcga	ggtatgtagg	cggtgctaca	gagttcttga	agtggtggcc	1020
taactacggc tacactagaa	ggacagtatt	tggtatctgc	gctctgctga	agccagttac	1080
cttcggaaaa agagttggta	gctcttgatc	cggcaaacaa	accaccgctg	gtagcggtgg	1140
tttttttgtt tgcaagcagc	agattacgcg	cagaaaaaaa	ggatctcaag	aagatccttt	1200
gatcttttct acggggtctg	acgctcagtg	gaacgaaaac	tcacgttaag	ggattttggt	1260
catgagatta tcaaaaagga	tcttcaccta	gatcctttta	aattaaaaat	gaagttttaa	1320
atcaatctaa agtatatatg	agtaaacttg	gtctgacagt	taccaatgct	taatcagtga	1380
ggcacctatc tcagcgatct	gtctatttcg	ttcatccata	gttgcctgac	tccccgtcgt	1440
gtagataact acgatacggg	agggcttacc	atctggcccc	agtgctgcaa	tgataccgcg	1500
agacccacgc tcaccggctc	cagatttatc	agcaataaac	cagccagccg	gaagggccga	1560
gcgcagaagt ggtcctgcaa	ctttatccgc	ctccatccag	tctattaatt	gttgccggga	1620
agctagagta agtagttcgc	cagttaatag	tttgcgcaac	gttgttgcca	ttgctacagg	1680
categtggtg teaegetegt	cgtttggtat	ggcttcattc	agctccggtt	cccaacgatc	1740
aaggcgagtt acatgatccc	ccatgttgtg	caaaaaagcg	gttagctcct	teggteetee	1800
gatcgttgtc agaagtaagt	tggccgcagt	gttatcactc	atggttatgg	cagcactgca	1860
taattctctt actgtcatgc	catccgtaag	atgcttttct	gtgactggtg	agtactcaac	1920
caagtcattc tgagaatagt	gtatgcggcg	accgagttgc	tcttgcccgg	cgtcaatacg	1980
ggataatacc gcgccacata	gcagaacttt	aaaagtgctc	atcattggaa	aacgttcttc	2040
ggggcgaaaa ctctcaagga	tcttaccgct	gttgagatcc	agttcgatgt	aacccactcg	2100
tgcacccaac tgatcttcag	catcttttac	tttcaccagc	gtttctgggt	gagcaaaaac	2160
aggaaggcaa aatgccgcaa	aaaagggaat	aagggcgaca	cggaaatgtt	gaatactcat	2220
actcttcctt tttcaatatt	attgaagcat	ttatcagggt	tattgtctca	tgagcggata	2280
catatttgaa tgtatttaga	aaaataaaca	aataggggtt	ccgcgcacat	ttccccgaaa	2340
agtgccacct gaacgaagca	tctgtgcttc	attttgtaga	acaaaaatgc	aacgcgagag	2400
cgctaatttt tcaaacaaag	aatctgagct	gcatttttac	agaacagaaa	tgcaacgcga	2460
aagcgctatt ttaccaacga	agaatctgtg	cttcattttt	gtaaaacaaa	aatgcaacgc	2520
gagagcgcta attttcaaa	caaagaatct	gagctgcatt	tttacagaac	agaaatgcaa	2580
cgcgagagcg ctattttacc	aacaaagaat	ctatacttct	tttttgttct	acaaaaatgc	2640

atcccgagag cgct	attttt ctaacaaag	c atcttagatt	acttttttc	tcctttgtgc	2700
gctctataat gcag	tctctt gataacttt	tgcactgtag	gtccgttaag	gttagaagaa	2760
ggctactttg gtgt	ctattt tctcttcca	: aaaaaaagcc	tgactccact	tcccgcgttt	2820
actgattact agcg	aagctg cgggtgcat	ttttcaagat	aaaggcatcc	ccgattatat	2880
tctataccga tgtg	gattgc gcatacttt	g tgaacagaaa	gtgatagcgt	tgatgattct	2940
tcattggtca gaaa	attatg aacggtttc	tctattttgt	ctctatatac	tacgtatagg	3000
aaatgtttac attt	tcgtat tgttttcga	tcactctatg	aatagttctt	actacaattt	3060
ttttgtctaa agag	taatac tagagataa	a cataaaaaat	gtagaggtcg	agtttagatg	3120
caagttcaag gagc	gaaagg tggatgggt	a ggttatatag	ggatatagca	cagagatata	3180
tagcaaagag atac	ttttga gcaatgttt	g tggaagcggt	attcgcaata	ttttagtagc	3240
tegttacagt cegg	tgcgtt tttggtttt	tgaaagtgcg	tcttcagagc	gcttttggtt	3300
ttcaaaagcg ctct	gaagtt cctatactt	ctagagaata	ggaacttcgg	aataggaact	3360
tcaaagcgtt tccg	aaaacg agcgcttcc	g aaaatgcaac	gcgagctgcg	cacatacagc	3420
tcactgttca cgtc	gcacct atatctgcg	gttgcctgta	tatatatata	catgagaaga	3480
acggcatagt gcgt	gtttat gcttaaatg	c gtacttatat	gcgtctattt	atgtaggatg	3540
aaaggtagtc tagt	acctcc tgtgatatta	a tcccattcca	tgcggggtat	cgtatgcttc	3600
cttcagcact accc	tttagc tgttctata	gctgccactc	ctcaattgga	ttagtctcat	3660
ccttcaatgc tatc	atttcc tttgatatt	g gatcatacta	agaaaccatt	attatcatga	3720
cattaaccta taaa	aatagg cgtatcacg	a ggccctttcg	tctcgcgcgt	ttcggtgatg	3780
acggtgaaaa cctc	tgacac atgcagctco	c cggagacggt	cacagcttgt	ctgtaagcgg	3840
atgccgggag caga	caagcc cgtcagggc	g cgtcagcggg	tgttggcggg	tgtcggggct	3900
ggcttaacta tgcg	gcatca gagcagatte	g tactgagagt	gcaccatacc	acagcttttc	3960
aattcaattc atca	tttttt ttttattct	tttttttgatt	tcggtttctt	tgaaattttt	4020
ttgattcggt aatc	tccgaa cagaaggaa	g aacgaaggaa	ggagcacaga	cttagattgg	4080
tatatatacg cata	tgtagt gttgaagaa	a catgaaattg	cccagtattc	ttaacccaac	4140
tgcacagaac aaaa	acctgc aggaaacga	a gataaatcat	gtcgaaagct	acatataagg	4200
aacgtgctgc tact	catect agtectgtte	g ctgccaagct	atttaatatc	atgcacgaaa	4260
agcaaacaaa cttg	tgtgct tcattggate	g ttcgtaccac	caaggaatta	ctggagttag	4320
ttgaagcatt aggt	cccaaa atttgttta	c taaaaacaca	tgtggatatc	ttgactgatt	4380
tttccatgga gggc	acagtt aagccgcta	a aggcattatc	cgccaagtac	aattttttac	4440

tcttcgaaga	cagaaaattt	gctgacattg	gtaatacagt	caaattgcag	tactctgcgg	4500
gtgtatacag	aatagcagaa	tgggcagaca	ttacgaatgc	acacggtgtg	gtgggcccag	4560
gtattgttag	cggtttgaag	caggcggcag	aagaagtaac	aaaggaacct	agaggccttt	4620
tgatgttagc	agaattgtca	tgcaagggct	ccctatctac	tggagaatat	actaagggta	4680
ctgttgacat	tgcgaagagc	gacaaagatt	ttgttatcgg	ctttattgct	caaagagaca	4740
tgggtggaag	agatgaaggt	tacgattggt	tgattatgac	acccggtgtg	ggtttagatg	4800
acaagggaga	cgcattgggt	caacagtata	gaaccgtgga	tgatgtggtc	tctacaggat	4860
ctgacattat	tattgttgga	agaggactat	ttgcaaaggg	aagggatgct	aaggtagagg	4920
gtgaacgtta	cagaaaagca	ggctgggaag	catatttgag	aagatgcggc	cagcaaaact	4980
aaaaaactgt	attataagta	aatgcatgta	tactaaactc	acaaattaga	gcttcaattt	5040
aattatatca	gttattaccc	tatgcggtgt	gaaataccgc	acagatgcgt	aaggagaaaa	5100
taccgcatca	ggaaattgta	aacgttaata	ttttgttaaa	attcgcgtta	aatttttgtt	5160
aaatcagctc	attttttaac	caataggccg	aaatcggcaa	aatcccttat	aaatcaaaag	5220
aatagaccga	gatagggttg	agtgttgttc	cagtttggaa	caagagtcca	ctattaaaga	5280
acgtggactc	caacgtcaaa	gggcgaaaaa	ccgtctatca	gggcgatggc	ccactacgtg	5340
aaccatcacc	ctaatcaagt	tttttggggt	cgaggtgccg	taaagcacta	aatcggaacc	5400
ctaaagggag	cccccgattt	agagcttgac	ggggaaagcc	ggcgaacgtg	gcgagaaagg	5460
aagggaagaa	agcgaaagga	gcgggcgcta	gggcgctggc	aagtgtagcg	gtcacgctgc	5520
gcgtaaccac	cacacccgcc	gcgcttaatg	cgccgctaca	gggcgcgtcg	cgccattcgc	5580
cattcaggct	gcgcaactgt	tgggaagggc	gatcggtgcg	ggcctcttcg	ctattacgcc	5640
agctggatct	tcgagcgtcc	caaaaccttc	tcaagcaagg	ttttcagtat	aatgttacat	5700
gcgtacacgc	gtctgtacag	aaaaaaaga	aaaatttgaa	atataaataa	cgttcttaat	5760
actaacataa	ctataaaaaa	ataaataggg	acctagactt	caggttgtct	aactccttcc	5820
ttttcggtta	gagcggatct	tagctagccg	cggtaccaag	cttaggcgag	agtcagctgc	5880
cttatgcggc	ctgaggcagc	tcttgctttt	cctgacgcgg	ctcgagcagt	tcctgaagcg	5940
gcctgggcct	catcgcccag	caggtagtct	acaccttccc	caattgcatg	ggctagggga	6000
gcggcaggtg	ggaacaatgt	ggagaccacc	ggcacagcta	tcctccttat	ggcccggatt	6060
atgtctttga	agccgaatgc	tcctgcaatc	ttcaggggag	agttgaggtc	ggccacctcc	6120
atgaagtatt	cacgaaagtc	agtgtactcc	cttgttggcc	agacggtctt	gatgccaaga	6180
cggtccctct	cactcagtat	caattttgtg	tagttcatgg	ctcctgggtc	aaatcggccg	6240

WO 2005/071068 13 PCT/EP2005/000694

tattctgtaa ccaggtt	ctt tgctagttca	ggatttggga	tcagctcgaa	gttgctcacc	6300
ccagcgaccg taacgac	egga teetgttgee	actctttcgt	aggccactag	cgtgacggga	6360
cggagggccc ctggata	gtt gccaccatgg	atcgtcactg	ctaggctccc	tcttgccgac	6420
catgacatct gatcccc	ctgc ctgaccacca	cttttggagg	tcactatctc	cagtttgatg	6480
gatgtgattg gctgggt	tat ctcgtttgtt	ggaatcacaa	gattgaatgg	cataaggttg	6540
teggtgeegg tegteag	gccc attgtttgcg	gccacagccc	tggtgattac	cgttgtccca	6600
tcaaagccta tgaggta	gat ggtggcgcc	agtacaaggc	cgtggacgct	tgttcgaaac	6660
acgagetete ecceaac	gct gaggettgtg	atggcatcaa	tgttggctga	gaacagtgtg	6720
attgttaccc cacctgg	sttg gtactgtgat	gagaattggt	aatcatcggc	tgcagttatg	6780
gtgtagactc tgggcct	gtc actgctgtca	catgtggcta	ccatttttgg	gtcaagccct	6840
attgcgggaa tggggtc	acc aagcctcaca	tacccaagat	catatgatgt	gggtaagctg	6900
aggacggtga ccccttc	ecc tactaggacg	ttcccaattt	tgtcgttgat	gttggctgtt	6960
gcagacatca acccatt	gta gctaacatct	gtcagttcac	tcaggcttcc	ttggaaggtc	7020
acggcgttta tggtgcc	gtt tagtgcataa	acgccaccag	gaagtgtgct	tgacctcact	7080
gtgagactcc gactcac	tag cctgcagtag	ttgtaactgg	ccggtaggtt	ctgggcagtc	7140
aggagcatct gatcgaa	ctt gtagttccca	ttgccctgca	gtgtgtagtg	agcacccaca	7200
attgagccag ggaatcc	agg gaaaaagaca	attagccctg	accctgtgtc	ccccacagtc	7260
aaattgtagg tcgaggt	ctc tgacctgaga	gtgtgcttct	ccagggtgtc	gtccggaatg	7320
gacgccggtc cggttgt	tgg catcagaagg	ctccgtatga	acggaacaat	ctgctgggtt	7380
tgatctgaca ggtttgt	cat agatccgggg	ttttttctcc	ttgacgttaa	agtatagagg	7440
tatattaaca attttt	gtt gatactttta	ttacatttga	ataagaagta	atacaaaccg	7500
aaaatgttga aagtatt	agt taaagtggtt	atgcagtttt	tgcatttata	tatctgttaa	7560
tagatcaaaa atcatcg	ctt cgctgattaa	ttaccccaga	aataaggcta	aaaaactaat	7620
cgcattatca tcctatg	gtt gttaatttga	ttcgttcatt	tgaaggtttg	tggggccagg	7680
ttactgccaa ttttcc	tct tcataaccat	aaaagctagt	attgtagaat	ctttattgtt	7740
cggagcagtg cggcgcg	agg cacatctgcg	tttcaggaac	gcgaccggtg	aagacgagga	7800
cgcacggagg agagtct	tcc ttcggagggc	tgtcacccgc	teggeggett	ctaatccgta	7860
cttcaatata gcaatga	gca gttaagcgta	ttactgaaag	ttccaaagag	aaggttttt	7920
taggctaaga taatggg	gct ctttacattt	ccacaacata	taagtaagat	tagatatgga	7980
tatgtatatg gatatgt	ata tggtggtaat	gccatgtaat	atgattatta	aacttctttg	8040

WO 2005/071068 14 PCT/EP2005/000694

cgtccatcca aaaaaaaa	gt aagaattttt gaaaatto	cga attcg atg gct gca tca 809 Met Ala Ala Ser 1
	Pro Glu Leu Glu Ser A	gcc gtc aga gca atg gaa 814 Ala Val Arg Ala Met Glu 15 20
		tct gca ctc agt gtg ttc 819 Ser Ala Leu Ser Val Phe 35
		gac atg gcc aac ttc gca 824 Asp Met Ala Asn Phe Ala 50
		aat ttt ctt gca aac gca 828 Asn Phe Leu Ala Asn Ala 65
		aag tac ggg aca gca ggc 833 Lys Tyr Gly Thr Ala Gly 80
	Arg Gly Pro Thr Pro (gag gaa gca cag agg gaa 838 Glu Glu Ala Gln Arg Glu 95 100
	Ser Lys Lys Met Glu 3	acc atg ggc atc tac ttt 843 Thr Met Gly Ile Tyr Phe 115
		cac cga ggg cca agc cca 848 His Arg Gly Pro Ser Pro 130
		gaa ata ccg gac cca aac 852 Glu Ile Pro Asp Pro Asn 145
		aag agc cgg ttg gca tca 857 Lys Ser Arg Leu Ala Ser 160
	Arg Ala Ala Thr Ser I	atc tac ggg gct cca gga 862 Lle Tyr Gly Ala Pro Gly 175 180
	Gln Ala Phe Ile Asp	gaa gtt gcc aaa gtc tat 867 Glu Val Ala Lys Val Tyr 195
		gaa cag atg aaa gat ctg 2872 Glu Gln Met Lys Asp Leu 210
		aat ccc agg cgg gct cta 876 Asn Pro Arg Arg Ala Leu 225

	ccc Pro								8817
	ggc								8865
	gcc Ala								8913
	atc Ile								8961
	tcc Ser 295								9009
	ttc Phe								9057
	acc Thr								9105
	atg Met								9153
	cag Gln								9201
	gcc Ala 375								9249
	aag Lys								9297
	gag Glu								9345
	aag Lys								9393
	ggc Gly								9441
	gac Asp 455								9489

cag Gln	tcc Ser	gcc Ala	ctg Leu	agc Ser	aaa Lys	gac Asp	ccc Pro	aac Asn	gag Glu	aag Lys	cgc Arq	gat Asp	cac His	atg Met	gtc Val	9537
	470				_	475				-	480					
ctg Leu 485	Leu	gag Glu	ttc Phe	gtg Val	acc Thr 490	gcc Ala	gcc Ala	Gly	atc Ile	act Thr 495	ctc Leu	ggc	atg Met	gac Asp	gag Glu 500	9585
	tac Tyr		taa	agc												9600
<21 <21 <21 <21	1> 2>	10 503 PRT Arti	ficia	al s	equei	nce										
<22 <22		pVP2	-VP3·	-GFP	prot	tein										
<40 Met 1		10 Ala	Ser	Glu 5	Phe	Lys	Glu	Thr	Pro 10	Glu	Leu	Glu	Ser	Ala 15	Val	
Arg	Ala	Met	Glu 20	Ala	Ala	Ala	Asn	Val 25	Asp	Pro	Leu	Phe	Gln 30	Ser	Ala	
Leu	Ser	Val 35	Phe	Met	Trp	Leu	Glu 40	Glu	Asn	Gly	Ile	Val 45	Thr	Asp	Met	
Ala	Asn 50	Phe	Ala	Leu	Ser	Asp 55	Pro	Asn	Ala	His	Arg 60	Met	Arg	Asn	Phe	
Leu 65	Ala	Asn	Ala	Pro	Gln 70	Ala	Gly	Ser	Lys	Ser 75	Gln	Arg	Ala	Lys	Tyr 80	
Gly	Thr	Ala	Gly	Tyr 85	Gly	Val	Glu	Ala	Arg 90	Gly	Pro	Thr	Pro	Glu 95	Glu	
Ala	Gln	Arg	Glu 100	Lys	Asp	Thr	Arg	Ile 105	Ser	Lys	Lys	Met	Glu 110	Thr	Met	
Gly	Ile	Tyr 115	Phe	Ala	Thr	Pro	Glu 120	Trp	Val	Ala	Leu	Asn 125	Gly	His	Arg	•
Gly	Pro 130	Ser	Pro	Gly	Gln	Val 135	Lys	Tyr	Trp	Gln	Asn 140	Lys	Arg	Glu	Ile	
Pro 145	Asp	Pro	Asn	Glu	Asp 150	Tyr	Leu	Asp	Tyr	Val 155	His	Ala	Glu	Lys	Ser 160	
Arg	Leu	Ala	Ser	Glu 165	Glu	Gln	Ile	Leu	Arg 170	Ala	Ala	Thr	Ser	Ile 175	Tyr	
Gly	Ala	Pro	Gly 180	Gln	Ala	Glu	Pro	Pro 185	Gln	Ala	Phe	Ile	Asp 190	Glu	Val	
Ala	Lys	Val 195	Tyr	Glu	Ile	Asn	His 200	Gly	Arg	Gly	Pro	Asn 205	Gln	Glu	Gln	

WO 2005/071068 17 PCT/EP2005/000694

Met	Lys 210	Asp	Leu	Leu	Leu	Thr 215	Ala	Met	Glu	Met	Lys 220	His	Arg	Asn	Pro
Arg 225		Ala	Leu	Pro	Lys 230	Pro	Lys	Pro	Lys	Pro 235	Asn	Ala	Pro	Thr	Gln 240
Arg	Pro	Pro	Gly	Arg 245	Leu	Gly	Arg	Trp	Ile 250	Arg	Thr	Val	Ser	Asp 255	Glu
Asp	Leu	Glu	Gly 260	Ser	Ile	Ala	Thr	Met 265	Val	Ser	Lys	Gly	Glu 270	Glu	Leu
Phe	Thr	Gly 275	Val	Val	Pro	Ile	Leu 280	Val	Glu	Leu	Asp	Gly 285	Asp	Val	Asn
Gly	His 290	Lys	Phe	Ser	Val	Ser 295	Gly	Glu	Gly	Glu	Gly 300	Asp	Ala	Thr	Tyr
Gly 305	Lys	Leu	Thr	Leu	Lys 310	Phe	Ile	Cys	Thr	Thr 315	Gly	Lys	Leu	Pro	Val 320
Pro	Trp	Pro	Thr	Leu 325	Val	Thr	Thr	Leu	Thr 330	Tyr	Gly	Val	Gln	Cys 335	Phe
Ser	Arg	Tyr	Pro 340	Asp	His	Met	Lys	Gln 345	His	Asp	Phe	Phe	Lys 350	Ser	Ala
Met	Pro	Glu 355	Gly	Tyr	Val	Gln	Glu 360	Arg	Thr	Ile	Phe	Phe 365	Lys	Asp	Asp
Gly	Asn 370	Tyr	Lys	Thr	Arg	Ala 375	Glu	Val	Lys	Phe	Glu 380	Gly	Asp	Thr	Leu
Val 385	Asn	Arg	Ile	Glu	Leu 390	Lys	Gly	Ile	Asp	Phe 395	Lys	Glu	Asp	Gly	Asn 400
Ile	Leu	Gly	His	Lys 405	Leu	Glu	Tyr	Asn	Tyr 410	Asn	Ser	His	Asn	Val 415	Tyr
Ile	Met	Ala	Asp 420	Lys	Gln	Lys	Asn	Gly 425	Ile	Lys	Val	Asn	Phe 430	Lys	Ile
Arg	His	Asn 435	Ile	Glu	Asp	Gly	Ser 440	Val	Gln	Leu	Ala	Asp 445	His	Tyr	Gln
Gln	Asn 450	Thr	Pro	Ile	Gly	Asp 455	Gly	Pro	Val	Leu	Leu 460	Pro	Asp	Asn	His
Tyr 465	Leu	Ser	Thr	Gln	Ser 470	Ala	Leu	Ser	Lys	Asp 475	Pro	Asn	Glu	Lys	Arg 480
Asp	His	Met	Val	Leu 485	Leu	Glu	Phe	Val	Thr 490	Ala	Ala	Gly	Ile	Thr 495	Leu
Gly	Met	Asp	Glu 500	Leu	Tyr	Lys									